

Remarks

I. Status of claims

Claims 1-29 are pending.

Claim 21 has been amended to provide antecedent basis for "uncompressed image frames".

The numbering of claims 27-30 has been changed to 26-29, respectively.

The Examiner has indicated that claim 26 would be allowable if rewritten in independent form.

II. Claim rejections

A. Claims 1-8

Claims 1-4

The Examiner has rejected claims 1-4 under 35 U.S.C. § 103(a) over Wyman (U.S. 2003/0112347) in view of Voss (U.S. 2003/0147640).

Claim 1 includes the steps of storing *with high priority* the video frames and the high resolution still images in raw format in a memory during acquisition of the high resolution still images in burst mode, and processing *with low priority* the video frames stored in the memory using a video pipeline.

The Examiner consistently has failed to specifically address the feature of claim 1 that the recited storing and processing steps are performed with different priority levels. The Examiner merely has asserted that Wyman discloses these method steps.

Contrary to the Examiner's assertion, however, Wyman fails to even hint that video frames are stored with a high priority during acquisition of the high resolution still images in burst mode and processed with a low priority using a video pipeline. Indeed, in Wyman's approach, the same priority levels are applied to the steps of storing high resolution video frames in frame buffer 204 (step 506 in FIG. 5A) and processing the high resolution video frames (step 507 in FIG. 5A). For example, the storing and processing steps 506, 507 are

performed together during each frame processing cycle without any indication that the processor 201 performs the storing step 506 with high priority and the processing step 507 with low priority. Wyman does not teach or suggest anything that would have led one of ordinary skill in the art at the time of the invention to configure the processor 201 to perform the storing step 506 with high priority and the processing step 507 with low priority.

Similarly, Voss fails to teach or suggest a method for concurrently processing digital video frames and high resolution still image frames in burst mode that includes the steps of storing *with high priority* the video frames and the high resolution still images in raw format in a memory during acquisition of the high resolution still images in burst mode, and processing *with low priority* the video frames stored in the memory using a video pipeline. Indeed, in Voss' approach, during the burst mode the still image data captured by the digital vide recorder and stored in the burst mode memory 140 is not even processed using a video pipeline (see, e.g., paragraph [0025]). Thus, Voss hardly teaches or suggests anything about storing such still image data with high priority and processing such still image data with low priority.

For at least these reasons, the Examiner's rejection of independent claim 1 under 35 U.S.C. § 103(a) over Wyman in view of Voss should be withdrawn.

Claims 2-4 incorporate the features of independent claim 1 and therefore are patentable over Wyman and Voss for at least the same reasons.

Dependent claim 5

Claim 5 incorporates the features of independent claim 1.

The Examiner has rejected claim 5 under 35 U.S.C. § 103(a) over Wyman in view of Voss and Matsumoto (U.S. 2003/0052986). Matsumoto, however, does not make up for the failure of Wyman and Voss to teach or suggest the invention of claim 1 that includes the steps of storing *with high priority* the video frames and the high resolution still images in raw format in a memory during acquisition of the high resolution still images in burst mode, and processing *with low priority* the video frames stored in the memory using a video pipeline. Therefore, claim 5 is patentable over Wyman in view of Voss and Matsumoto for at least the same reasons explained above in connection with claim 1.

Dependent claims 6-8

Each of claims 6-8 incorporates the features of independent claim 1.

The Examiner has rejected claims 6-8 under 35 U.S.C. § 103(a) over Wyman in view of Voss and Bittner (U.S. 6,330,400). In particular, the Examiner has cited Bittner merely for his disclosure of an ASIC “structured to perform the desired image processing functions including, but not limited to: 1. Demosaic; 2. Color correction, compensation and other image quality; ... 7. Image compression.”

Bittner, however, does not make up for the failure of Wyman and Voss to teach or suggest the method of claim 1 that includes the steps of storing *with high priority* the video frames and the high resolution still images in raw format in a memory during acquisition of the high resolution still images in burst mode, and processing *with low priority* the video frames stored in the memory using a video pipeline.

Accordingly, the Examiner's rejection of claims 6-8 under 35 U.S.C. § 103(a) over Wyman in view of Voss and Bittner should be withdrawn for at least the same reasons explained above in connection with claim 1.

B. Claims 9-16

Claims 9-10 and 12-14

Claim 9 is an independent claim and claims 10 and 12-14 depend from independent claim 9.

The Examiner has rejected claims 9-10 and 12-14 under 35 U.S.C. § 103(a) over Wyman in view of Voss.

Claim 9 recites a joint video and still image pipeline that includes a sensor controller capable of storing *with high priority* the video frames and high resolution still images acquired during the burst mode in raw format into a memory, and one or more processors capable of concurrently processing with *low priority* the video frames and the high resolution still images acquired during the burst mode, wherein the video frames are processed using a video pipeline.

As explained above in connection with independent claim 1, in Wyman's approach, the same priority levels are applied to the steps of storing high resolution video frames in the frame buffer 204 (step 506 in FIG. 5A) and processing the high resolution video frames (step 507 in FIG. 5A). For example, the storing and processing steps 506, 507 are performed together during each frame processing cycle without any indication that the processor 201 performs the storing step 506 with high priority and the processing step 507 with low priority. Wyman does not teach or suggest anything that would have led one of ordinary skill in the art at the time of the invention to configure the processor 201 to perform the storing step 506 with high priority and the processing step 507 with low priority.

In Voss' approach, during the burst mode the still image data captured by the digital video recorder and stored in the burst mode memory 140 is not even processed using a video pipeline (see, e.g., paragraph [0025]). Thus, Voss hardly teaches or suggests anything about storing such still image data with high priority and processing such still image data with low priority.

For at least these reasons, the Examiner's rejection of independent claim 9 under 35 U.S.C. § 103(a) over Wyman in view of Voss should be withdrawn.

Claims 10 and 12-14 incorporate the features of independent claim 9 and therefore are patentable for at least the same reasons explained above.

Dependent claim 11

Claim 11 incorporates the features of independent claim 9.

The Examiner has rejected claim 11 under 35 U.S.C. § 103(a) over Wyman in view of Voss and Matsumoto.

The Examiner has cited Matsumoto merely for his disclosure of:

The still image codec unit includes a JPEG encoder for generating JPEG still image data by executing a JPEG compression process for still image data obtained by the camera unit and image processing unit ...

The moving image codec unit includes an MPEG encoder for generating MPEG moving image data by executing an MPEG compression process for moving image data obtained by the camera unit and image processing unit ...

Matsumoto, however, does not make up for the failure of Wyman and Voss to teach or suggest the invention of claim 1 that includes the steps of storing *with high priority* the video frames and the high resolution still images in raw format in a memory during acquisition of the high resolution still images in burst mode, and processing *with low priority* the video frames stored in the memory using a video pipeline. Therefore, claim 11 is patentable over Wyman in view of Voss and Matsumoto for at least the same reasons explained above in connection with claim 9.

Dependent claims 15 and 16

Each of claims 15 and 16 incorporates the features of independent claim 9.

The Examiner has rejected claims 15 and 16 under 35 U.S.C. § 103(a) over Wyman in view of Voss and Bittner. The Examiner has cited Bittner merely for his disclosure of an ASIC “structured to perform the desired image processing functions including, but not limited to: 1. Demosaic; 2. Color correction, compensation and other image quality; ... 7. Image compression.”

Bittner, however, does not make up for the failure of Wyman and Voss to teach or suggest the invention of claim 9 that includes a sensor controller capable of storing *with high priority* the video frames and high resolution still images acquired during the burst mode in raw format into a memory, and one or more processors capable of concurrently processing *with low priority* the video frames and the high resolution still images acquired during the burst mode, wherein the video frames are processed using a video pipeline.

Accordingly, the Examiner's rejection of claims 15 and 16 under 35 U.S.C. § 103(a) over Wyman in view of Voss and Bittner should be withdrawn for at least the same reasons explained above in connection with claim 9.

C. Claims 17-20

Claims 17-19

The Examiner has rejected claims 17-19 under 35 U.S.C. § 103(a) over Wyman in view of Voss.

Claim 17 includes instructions for storing *with high priority* the video frames and the high resolution still images in raw format in a memory during acquisition of the high resolution still images in burst mode, and processing *with low priority* the video frames stored in the memory using a video pipeline

As explained above in connection with independent claim 1, in Wyman's approach, the same priority levels are applied to the steps of storing high resolution video frames in the frame buffer 204 (step 506 in FIG. 5A) and processing the high resolution video frames (step 507 in FIG. 5A). For example, the storing and processing steps 506, 507 are performed together during each frame processing cycle without any indication that the processor 201 performs the storing step 506 with high priority and the processing step 507 with low priority. Wyman does not teach or suggest anything that would have led one of ordinary skill in the art at the time of the invention to configure the processor 201 to perform the storing step 506 with high priority and the processing step 507 with low priority.

In Voss' approach, during the burst mode the still image data captured by the digital video recorder and stored in the burst mode memory 140 is not even processed using a video pipeline (see, e.g., paragraph [0025]). Thus, Voss hardly teaches or suggests anything about storing such still image data with high priority and processing such still image data with low priority.

For at least these reasons, the Examiner's rejection of independent claim 17 under 35 U.S.C. § 103(a) over Wyman in view of Voss should be withdrawn.

Dependent claims 18 and 19 incorporate the features of independent claim 17 and therefore are patentable over Wyman and Voss for at least the same reasons.

Dependent claim 20

Claim 20 incorporates the features of independent claim 17.

The Examiner has rejected claim 20 under 35 U.S.C. § 103(a) over Wyman in view of Voss and Matsumoto.

The Examiner has cited Matsumoto merely for his disclosure of:

The still image codec unit includes a JPEG encoder for generating JPEG still image data by executing a JPEG compression process for still image data obtained by the camera unit and image processing unit ...

The moving image codec unit includes an MPEG encoder for generating MPEG moving image data by executing an MPEG compression process for moving image data obtained by the camera unit and image processing unit ...

Matsumoto, however, does not make up for the failure of Wyman and Voss to teach or suggest the invention of claim 1 that includes the steps of storing *with high priority* the video frames and the high resolution still images in raw format in a memory during acquisition of the high resolution still images in burst mode, and processing *with low priority* the video frames stored in the memory using a video pipeline. Therefore, claim 20 is patentable over Wyman in view of Voss and Matsumoto for at least the same reasons explained above in connection with claim 17.

D. Claims 21-25 and 27-29

Claim 21 is an independent claim and claims 22-25 and 27-29 depend from independent claim 21.

With regard to claim 21, the Examiner merely has copied the claim language verbatim and asserted that "the same basis and rationale for claim rejection as applied to claim 1 are applied."

Claim 21, however, recites "in a burst mode of operation, storing acquired image frames in a memory at an uncompressed still image resolution level higher than the video resolution level, wherein at least one of the uncompressed image frames is designated a still image frame and other uncompressed image frames are designated video image frames." Neither Wyman nor Voss teaches or suggests such a storage step.

Wyman does not even hint that a frame stored in frame buffer 204 could be designated a still image frame or a video image frame. Indeed, in Wyman's approach, none of the frames that are stored in frame buffer 204 are processed into video frames. Instead, all of the frames that are stored in frame buffer 204 are handled as if they were still image frames. Accordingly, based on Wyman's teachings, one of ordinary skill in the art at the time of the invention would not have been motivated to designate some frames stored in frame buffer 204 as video frames and other frames stored in the frame buffer 204 as still image frames.

In Voss' approach, all of the image data captured during the burst mode is stored as high-resolution still image data in the burst mode memory 140. None of the high-resolution still image data that is stored in the burst mode memory 140 is processed into video frames (see, e.g., [0036]). Accordingly, based on Wyman's teachings, one of ordinary skill in the art at the time of the invention would not have been motivated to designate some of the high-resolution still image data that is stored in the burst mode memory 140 as video image frames and other of the high-resolution still images data as still image frames.

For at least these reasons, the Examiner's rejection of independent claim 21 under 35 U.S.C. § 103(a) over Wyman in view of Voss should be withdrawn.

Dependent claims 22-25 and 27-29 incorporate the features of independent claim 21 and therefore are patentable over Wyman and Voss for at least the same reasons. Claims 23-25 and 27 also are patentable for the following additional reasons.

Claim 23 recites the step of marking memory locations corresponding to the burst mode of operation in a continuous memory sequence in which the compressed image frames are stored during the non-burst mode. Neither Wyman nor Voss teaches or suggests such a marking step. In Wyman's approach, the only data stored in the tape recording medium 110 are the converted motion video frames. Wyman does not even hint that the memory locations in the tape recording medium 110 corresponding to the burst mode of operation could be marked. Indeed, in Wyman's approach all of the high resolution frames are converted to the motion video format (see step 507 in FIG. 5A) and therefore there is no need to mark locations in the tape recording medium 110 corresponding to the burst mode. Similarly, Voss does not even hint that the memory locations in the tape media 135 corresponding to the burst mode of operation could be marked. For at least these additional reasons, the Examiner's rejection of claim 23 should be withdrawn.

Claims 24 and 25 incorporate the features of claim 23 and therefore are patentable for at least the same reasons.

D. Claim 26

Claim 26 incorporates the features of independent claim 1.

The Examiner has rejected claim 26 over Wyman in view of Voss and Wong (U.S. 2003/0058355). Wong, however, does not make-up for the failure of Wyman and Voss to

teach or suggest, "in a burst mode of operation, storing acquired image frames in a memory at an uncompressed still image resolution level higher than the video resolution level, wherein at least one of the uncompressed image frames is designated a still image frame and other uncompressed image frames are designated video image frames," as recited in claim 21. For at least this reason, the Examiner's rejection of claim 26 should be withdrawn.

In addition, none of the cited references teaches anything that would have motivated one of ordinary skill in the art at the time of the invention to modify Wyman's video camera system to process image frames acquired in the burst mode of operation using the video pipeline to generate a burst video sequence, as recited in claim 26. The Examiner's proposed modification of Wyman's video camera system (which is not taught or suggested by any of the cited references) would only produce a burst video sequence that is redundant to the video sequence that Wyman's video camera system stores on tape recording medium 110. Accordingly, one of ordinary skill in the art at the time of the invention would not have been motivated to make such a modification because it would not have served any useful purpose and therefore it only would have detrimentally impacted the performance and cost of the resulting video camera system. For this additional reason, the Examiner's rejection of claim 26 should be withdrawn.

III. Conclusion

For the reasons explained above, all of the pending claims are now in condition for allowance and should be allowed.


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Edouard Garcia
Reg. No. 38,461
Telephone No.: (650) 631-6591

Please direct all correspondence to:

Hewlett-Packard Company
Intellectual Property Administration
Legal Department, M/S 35
P.O. Box 272400
Fort Collins, CO 80528-9599